

## Pressemitteilung

Museum für Naturkunde - Leibniz-Institut für Evolutions- und Biodive

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## Biodiversity discovery: Dark taxa drive insect diversity

**20 insect families globally account for 50% of flying insect biodiversity, whether in local meadows or tropical forests. Researchers from the Museum of Natural History Berlin, National University of Singapore, Swedish University of Agricultural Sciences, and University of California (Riverside) made this surprising discovery. They analyzed samples from eight countries and numerous habitats across all five biogeographic regions using advanced sequencing technologies.**

Biodiversity loss ranks among the top three risks to humanity, as stated in the 2023 World Economic Forum Global Risks Report. Understanding biodiversity's basic building blocks is essential to monitor changes, identify influencing factors, and implement appropriate policies. However, much of terrestrial animal diversity, including insects, remains unknown or "dark taxa."

For example, the global biodiversity information portal GBIF has nine times more information on birds than insects and arthropods, despite birds only accounting for 0.2% of biodiversity. Prof. Rudolf Meier, head of the Center for Integrative Biodiversity Discovery at the Museum für Naturkunde Berlin, highlights the importance of this study in addressing this deficit for effective nature conservation. He emphasizes the need to learn more about insects, as their combined biomass and biodiversity far surpass that of all vertebrates, and they are crucial for survival.

To determine the global taxonomic composition of flying insects, researchers used Malaise traps. These standardized traps are widely employed in global biomonitoring programs. However, analyzing samples is challenging when examining individual insects. Thanks to recent advances in sequencing technologies, biodiversity can now be estimated with "DNA barcodes".

Researchers used DNA barcodes to assign 225,261 specimens to 25,000 species to 458 families. Dr. Amrita Srivathsan, the study's lead author, noted the surprising finding that 10-20 families dominate flying insect communities worldwide. This is remarkable as samples were collected from various climates and habitats like tropical rainforests, montane forests, cedar savannas, scrub forests, thorn fields, mangroves, and swamps, with only Australia and Antarctica not being sampled.

Describing insects is a major challenge in understanding life on Earth, with over 80% still undescribed. The authors emphasize that a large fraction of terrestrial animal biodiversity remains unknown to science and will continue to be, unless "dark taxa" become a priority target in biodiversity research.

Publication: Srivathsan, A.; Ang, Y.; Heraty, J.M.; Hwang, W.S.; Jusoh, W. F.A.; Kutty, S.N.; Puniamoorthy, J.; Yeo, D.; Roslin, T.; Meier, R. (2023): Convergence of dominance and neglect in flying insect diversity. *Nature Ecology & Evolution*  
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